UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION

CHEETAH OMNI LLC, a Texas Limited Liability Company, *Plaintiff*, vs. **1. SAMSUNG ELECTRONICS AMERICA, INC.**, a Delaware Corporation, and **2. MITSUBISHI DIGITAL ELECTRONICS AMERICA, INC.** a Delaware Corporation. *Defendants*.	**HONORABLE LEONARD DAVIS** **CIVIL ACTION NO. 6:08-cv-279** *JURY TRIAL DEMANDED*

PLAINTIFF CHEETAH OMNI'S CLAIM CONSTRUCTION BRIEF

TABLE OF CONTENTS

TABLE OF AUTHORITIES

CASES

I. INTRODUCTION

Dr. Islam is the inventor of the asserted patents. He is a tenured professor of optics and photonics at the University of Michigan, and he holds over 100 patents on optical processing technology. Two of his patents are at issue in this case, U.S. Patent No. 7,339,714, and U.S. Patent No. 7,116,862. The asserted claims of the '714 patent are directed to a "light processing system," and the asserted claims of the '862 patent are directed to method of "processing light."

Dr. Islam has been at the center of several successful start-up companies in the optics field, including AccuPhotonics (1994), Xtera Communications (1998), Celeste Optics (2000) and Omni Sciences (2004). He was the founder and Chief Technology Officer at Celeste Optics at the time the application for the '862 patent was filed. Celeste Optics developed, fabricated and patented "**m**icro-**e**lectrical-**m**irror **s**ystems" ("MEMS") for various light processing applications. Dr. Islam parted with Celeste Optics in 2002, and created Cheetah Omni, the present owner of the patents-in-suit. Cheetah Omni commercializes innovative optics, photonics and semiconductor products for a diverse range of applications including displays, telecommunications, broadband access, and biomedical diagnostics and therapeutics.

In their claim construction tutorial, the defendants portray that the asserted claims as narrowly limited to an "optical communications network" used "to transmit digital data encoded onto optical wavelength channels" between "City A" and "City B." This philosophy underlies each construction they propose. However, the words of the asserted claims undermine

the defendants' strategy — they make no mention of these terms, or the narrow terms imported into their proposed constructions.

The defendants' approach is also undermined by the file history of the '714 patent. During prosecution, Cheetah Omni cited optical projector systems as prior art, and the U.S. Patent & Trademark Office ("PTO") interpreted all of the terms in dispute to cover those projector systems – systems that have absolutely nothing to do with "communications," "networks" or "encoded digital data." In fact, the PTO interpreted the disputed terms to cover Texas Instruments' projector systems. This creates a problem for the defendants because their "rear-projection" televisions at issue in this case also use Texas Instruments' projector systems (although not the prior art systems).

Under the guise of claim *construction,* the defendants seek to improperly *import* details from the specification to *change* the claims into something they are not, something much narrower than the light processing system and method claimed. In contrast, Cheetah Omni's proposed constructions stay true to the claims the PTO allowed, and are consistent with the intrinsic record from which they arose.

II. ANALYSIS

A. Summary Of Asserted Patents And Claims

Cheetah asserts claim 15 of the '862 patent (Ex. 1), and claims 18 and 19 of the '714 patent (Ex. 2).[1] A chart summarizing the claim terms and the parties' respective claim constructions is attached as Ex. 3. In most instances, the terms to be construed are different for each patent. In two instances however, common terms from each patent are submitted for construction. Those common terms are addressed together in this brief.

B. Legal Principles of Claim Construction

In *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*), the Federal Circuit "reaffirmed" the "basic principles of claim construction."

The first principle was the "bedrock principle of patent law" that "the claims of a patent define the invention to which the patentee is entitled the right to exclude" and the "written description part of the specification itself does **not** delimit the right to exclude. That is the function and purpose of claims." *Id., quoting Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996) (emphasis added). This is not a new principle of patent law.

The second guiding principle of claim construction is that claim terms are generally given the "ordinary and customary" meaning that the terms would have to a person of ordinary skill in the art in question at the time of the invention. *Phillips*, 415 F.3d at 1312-1313.

[1] At one time, Cheetah asserted claim 20 of the '714 patent. Cheetah no longer asserts that claim.

The starting point for determining the ordinary meaning of a disputed claim term is the intrinsic record: the patent and its prosecution history. *Id.*

While courts are permitted to *construe* genuinely disputed claim terms, it is improper to *import* narrow details from the specification into the claims. *Phillips*, 415 F.3d at 1323 ("[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments."); *Nazomi Communications, Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1369 (Fed. Cir. 2005) (claims may embrace "different subject matter than is illustrated in the specific embodiments in the specification"). This rule applies even when the patent at issue "describes only a single embodiment." *Phillips*, 415 F.3d at 1323.

The "undisputed public record" created by the prosecution history of a patent claim provides substantial guidance to determining the meaning a claim term would have to a person of ordinary skill in the art.

> To construe claim language, the court should also consider the patent's prosecution history, if it is in evidence. *Graham v. John Deere Co.*, 383 U.S. 1, 33, 86 S.Ct. 684, 701, 15 L.Ed.2d 545, 148 USPQ 459, 473 (1966). This "undisputed public record" of proceedings in the Patent and Trademark Office is of primary significance in understanding the claims. *See Autogiro*, 384 F.2d at 397, 155 USPQ at 702 (the "file wrapper" is "part [ ] of the patent").

Markman, 52 F.3d at 980; *Graham v. John Deere Co.*, 383 U.S. 1, 33 (1966) ("[A]n invention is construed not only in light of the claims, but also with reference to the file wrapper or prosecution history in the Patent Office."); *Phillips*, 415 F.3d at 1317 ("[T]he prosecution history provides evidence of how the PTO and the inventor understood the patent.").

C. Claim Construction Analysis

1. "unmodulated optical signal" / "optical signal" ('714 patent)

"an optical signal for processing, the optical signal comprising a plurality of wavelengths" ('862 patent)

Cheetah addresses the "optical signal" limitation of the asserted claims of the '714 and '862 patents together, because the terms, the parties' proposed constructions, and the underlying analysis are similar for both patents.

There does not appear to be any dispute that the "optical signal" recited in the asserted claims of the '714 and '862 patents comprises light of more than one wavelength. The dispute relates to the defendants' contention that the optical signal must "carry information" and, for the '714 patent, that "characteristics" of the light, such as amplitude, phase, or frequency, must be "varied."

The optical signal is an input to the light processor of the claimed inventions. In claim 18 of the '714 patent, the "optical signal" is "unmodulated" light that is separated into "parts" by an "optical divider." (Ex. 1, col. 25, ll. 40-43.) The '714 specification teaches that this unmodulated input includes light having a "plurality of wavelength signals." (Ex. 1, col. 17, ll. 31-33.) The specification discusses a "wavelength division demultiplexer" (e.g. item 535 illustrated in Figures 12 and 13a) – the optical divider of claim 18 – that divides the light into its constituent wavelengths. (Ex. 1, col. 17, ll. 34-36, 57-60.) Similarly, the '862 patent repeatedly describes "optical signals" broadly as light having "multiple wavelengths." (Ex. 2, col. 1, l. 67; col. 26, ll. 24-25; col. 27, l. 62; col. 28, ll. 44-47; col. 31, ll. 22-23.)

The asserted claims make no reference to "information," and they do not require that the optical signal "carry" anything — those are details that the defendants selectively cull from the patent specifications. Importing these limitations into the asserted claims is improper.

> If everything in the specification were required to be read into the claims, or if structural claims were to be limited to devices operated precisely as a specification-described embodiment is operated, there would be no need for claims. Nor could an applicant, regardless of the prior art, claim more broadly than that embodiment. Nor would a basis remain for the statutory necessity that an applicant conclude his specification with "claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112. It is the *claims* that measure the invention.

SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107, 1121 (Fed.Cir. 1985) (*en banc*) (italics in original).

The prosecution history for the '714 patent confirms that the defendants' "carries information" construction is improper. In three separate instances, the PTO interpreted the term "optical signal" to include incandescent light emitted from a typical lamp used in projector systems — **not** light "carrying information."

For example, in the July 27, 2006 Office Action (the first Office Action), the PTO determined that U.S. Patent Publication No. 2005/63196 ("Li") disclosed an "optical signal." (Ex. 4, p. 2.) Li discloses a cinema projector (Ex. 5) — **not** an optical "communications network" used "to transmit digital data encoded onto optical wavelength channels" between "City A" and "City B." The asserted "light processing" claims have a broader application than just the telecommunications field, contrary to the defendants' contention.

According to Li, "white light [is] emitted from a light source 10." (Ex. 5, ¶ 8.) The PTO determined that this light is an "optical signal" within the scope of the '714 claims. (Ex. 4, p. 2.)[2] Contrary to the defendants' proposed construction, this ordinary lamp light does not "carry information."

In the same Office Action, the PTO separately determined that U.S. Patent No. 6,877,859 ("Silverstein") discloses an "optical signal" being received at item 27. (Ex. 4, p. 6.) Similar to Li, Silverstein discloses a "digital projection apparatus." (Ex. 6, Abstract.) The PTO determined that separator 27 illustrated in Figure 6 of Silverstein separates the "optical signal." (Ex. 4, p. 6.) The optical signal received at separator 27 in Silverstein is light originating from "light source 20" — a projector lamp. (Ex. 6, col. 12, l. 34.) Again, this projector lamp light does not "carry information" and it is certainly not used for "telecommunications" or "networking" between cities.

In the January 17, 2007 Office Action (the second Office Action), the PTO determined that U.S. Patent No. 6,587,159 issued to Texas Instruments (the "TI" patent) receives and separates an "optical signal." (Ex. 7, p. 2.) Like Li and Silverstein, the TI patent discloses a digital projector. (Ex. 8.) The "optical signal" that the PTO referred to in the Office Action was the light originating from the "lamp console" 102 in the TI patent. (Ex. 8, col. 3, ll. 10-13.) Like the Li and Silverstein references, the TI patent has absolutely nothing to do with signals carrying "information" or "communication networks" between cities.

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[2] The PTO stated that the unmodulated optical signal was received at item 190 in Figure 2A of Li. An inspection of Figures 1 and 2A reveals that the light received at item 190 in Figure 2A is the "white light emitted from a light source 10" illustrated in Figure 1.

Throughout prosecution, the PTO never interpreted the term "optical signal" to require that the signal "carry information" such as the "encoded digital data" referenced in the defendants' tutorial. The PTO never read limitations into the term concerning the extent to which "characteristics" of the light, such as amplitude, phase, or frequency, are "varied." On the contrary, the PTO repeatedly determined that the term "optical signal" covered the light generated by lamps, such as light emitted from projector lamps. This intrinsic prosecution history confirms that the defendants' proposed construction is improper. *Markman*, 52 F.3d at 980 ("This undisputed public record of proceedings in the Patent and Trademark Office is of primary significance in understanding the claims."); *Graham*, 383 U.S. at 33; *Phillips*, 415 F.3d at 1317.

2. "light pipe" ('714 patent)

The parties do not dispute that the term "light pipe" covers an "optical fiber" or "fiber optic line." The dispute is whether the term is narrowly *limited* to that structure. In the first Office Action, the PTO interpreted the term "light pipe" more broadly than the narrow "fiber" proposed by the defendants. The PTO stated that item 260 in Li (illustrated below in yellow) is a "light pipe." (Ex. 4, p. 2.)

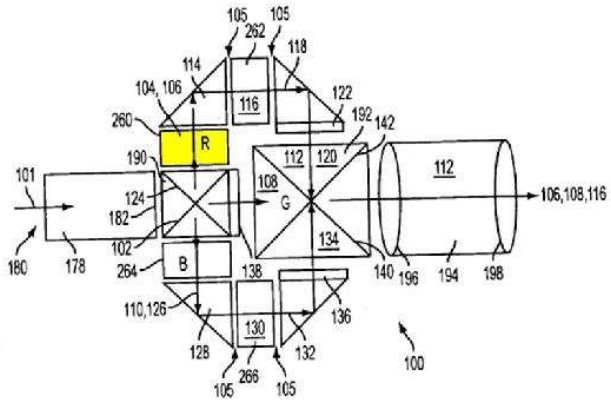

FIG. 2A

Item 260 is certainly **not** a fiber optic "line." Li discloses a "light pipe" 260 that "receive[s]" and "transmit[s]" light. (Ex. 5, ¶48.) Li states that the light pipe "may be made of a material such as quartz, glass, plastic, or acrylic" and "may be a straight light pipe (SLP), or a tapered light pipe (TLP)." (*Id.*)

Similarly, in the second Office Action, the PTO stated that item 304 (Fig. 3) in the TI patent is a light pipe. (Ex. 7, p. 2.) Item 304 is "a glass prism designed to internally reflect light." (Ex. 8, col. 4, ll. 37-41.) Again, this interpretation is much broader than the defendants' narrow construction of "light pipe" as merely a fiber optic "line."

Cheetah proposes construing the term to cover a "waveguide." This interpretation covers the PTO's interpretation that is broader than fiber optic "lines." Light pipes are considered by those of skill in the art to include both "fiber" and "optical" "waveguides." (Ex. 9.)[3]

3. "array of optical signal processing devices" ('714 patent)

The asserted '714 claims define the "array of signal processing devices" broadly as "a plurality of at least partially reflective mirrors." Nothing in the asserted claims requires that the array comprise "variable blazed gratings." Defendants improperly import that detail from a preferred embodiment described in the '714 specification.

In addition, the '714 specification states that the geometry and configuration of the array may vary "consistent with the invention" and "within the scope of the invention."

[3] Technical dictionaries may be useful in the claim construction process to resolve the meaning a disputed term may have had to a person of ordinary skill in the art. *Phillips*, 415 F.3d at 1318.

> Although strips 14 are shown as generally rectangular in shape, **any shape can be used consistent with the invention**. In addition, although strips 14 are shown as having a constant width (W_s), that measurement could vary between strips, or even along the same strip 14. (Ex. 1, '714 patent, col. 3, ll. 37-42.)
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> * * *
>
> Moreover, although particular configuration has been described with respect to FIGS. 10a-10d, numerous modifications could be made without departing from the scope of the invention. For example, **switches implementing different geometric configurations, or different numbers of blazed grating elements, circulators, reflective surfaces, or other optical elements are contemplated as being within the scope of the invention**. (Ex. 1, col. 3, ll. 37-42, col. 14, ll. 58-65, emphasis added.)

The above statements make clear that "variable blazed gratings" are only one of many possible configurations for the array, undermining the defendants' narrow construction.

In addition, during prosecution, the PTO determined that **d**igital **m**icro-mirror **d**evices ("DMDs") used in projector systems (not "gratings") meet the "array of optical signal processing devices" limitation of the asserted claims. In the first Office Action, the PTO determined that item 122 in Li (Fig. 2A) meets this limitation. (Ex. 5, p. 2.) Item 122 is **not** a variable blazed grating. Li discloses "modulator" 122. (Ex. 5, ¶ 44.) Li states that "modulator 122 may be disposed to modulate substantially light." (Ex. 5, ¶ 49.) The PTO also stated that Li disclosed, in ¶ 42, that a "DMD" may be used. (Ex. 4, p. 2.) The PTO stated that U.S. Patent No. 6,937,378 ("Yamazaki") and Silverstein disclose DMDs that meet the "array of optical signal processing devices" limitation of claims 18 and 19. (Ex. 4, pp. 3 and 6.) Like the '714 patent, Yamazaki broadly discloses a "MEMS" or "DMD" micro-mirror devices on a semiconductor substrate, such as those commonly used in projection systems. (Ex. 10, col. 10,

ll. 46-52.) Silverstein similarly states that a "DMD" may be used "as is well known in the digital projection art." (Ex. 6, col. 14, ll. 12-17.)

In the second Office Action, the PTO stated that the DMD disclosed in the TI patent meets the "array of optical signal processing devices" limitation. (Ex. 7, p. 2.) Figure 3 of the TI patent discloses an "optical path of the projector showing the relative locations of the major optical components when DMD's are used as modulators." (Ex. 8, col. 4, ll. 8-11.)

Significantly, **none** of the references the PTO relied on discloses a "variable blazed grating," or a "grating" of *any* kind. A person of ordinary skill in the art reading the '714 patent, together with the file history, would certainly not understand the claimed array to be limited to a "variable blazed grating" as the defendants improperly suggest.

Cheetah's proposed construction, "a plurality of mirrors arranged in a regular pattern that process the optical signal" is consistent with claims 18 and 19, and the broad teachings of the '714 patent and the file history. Defendants' proposed construction improperly adds limitations from the specification.

4. "partial rotation resulting in a reflection of the at least some of the portion of the first signal part"

"*rotating at least some of the mirrors in response to one or more control signals, the rotation of the at least some of the mirrors* resulting in a reflection of the at least some of the portion of the optical signal"

('714 patent)[4]

It does not appear that Cheetah's proposed constructions are disputed. Instead, defendants seek to added further limitations not found in the claims. They ask the Court to import unclaimed "reflection mode" and mirror position ("parallel") limitations. The defendants' proposed construction improperly imports limitations from some embodiments while excluding others. *Primos Inc. v. Hunter's Specialties Inc.*, 451 F.3d 841, 848 (Fed. Cir. 2006) ("[W]e . . . should not normally interpret a claim term to exclude a preferred embodiment."); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (stating a construction that excludes the preferred embodiment "is rarely, if ever correct and would require highly persuasive evidentiary support"). Defendants have no rational basis for choosing some embodiments over others.

According to the defendants' proposed construction, the array of mirrors can only reflect light when they are positioned "parallel" to the underlying semiconductor substrate layer. That construction is contrary to several embodiments in the '714 patent in which the mirrors reflect light in a tilted, non-parallel position, as illustrated below:

[4] In several instances, Cheetah has added surrounding the claim language shown in *italics* for context.

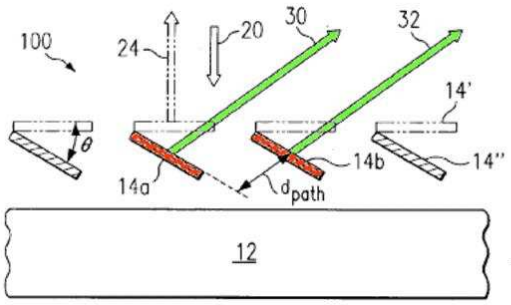

FIG. 1b

The specification clearly describes "output rays" 30 and 32 (shown in green) as being "reflected" by the *tilted* (**non**-parallel) mirrors (shown in red), called "strips" 14a and 14b:

> Output ray 30 represents the portion of input beam 20 reflected by strip 14a at position 14" and output beam 32 represents the portion of input beam 20 that is reflected by strip 14b at position 14". Although FIG. 1b shows just two output rays 30 and 32, it should be appreciated that any strips 14' that receive a portion of input beam 20 will reflect an output portion in the direction indicated by arrows 30 and 32. (Ex. 1, col. 4, ll. 38-45.)

It would be improper to exclude these express embodiments from the scope of the claims.

In addition, as explained above with respect to the "array of optical signal processing devices" limitation, the PTO determined that the array of moveable mirrors was met by traditional DMD devices used in projection systems, regardless of the position of the mirrors with respect to their underlying substrate layer. The '714 claims contain no requirement that the mirrors operate only in "reflection mode" or that they remain parallel, and the specification expressly discloses contrary embodiments in which the mirrors reflect light in a non-parallel configuration. The Court should not add defendants' further limitations.

5. "first signal part and a second signal part" ('714 patent)

The debate with respect to the first and second signal parts is whether they must be "copies" of one another. The '714 specification and the file history confirm that they do not.

Originally, the asserted system claims recited an "optical tap" to perform the claimed separating operation. (Ex. 11, p. 2.)[5] The '714 patent describes the operation of an optical tap as follows, with respect to Fig. 15:

> Electro-optic switch includes a fiber optic tap operable to communicate **a first portion of optical signal** 1012 to a delay line 1022 and **a second portion of optical signal** 1012 to a demultiplexer 1024.
> (Ex. 1, col. 20, ll. 36-39, emphasis added.)

This teaching that the optical signal is separated into two different "portions" indicates that the optical tap does not "copy" the optical signal. While the '714 specification states that the first and second portion *may be* a "copy" of the optical signal, it also states that they *may not be*:

> Fiber optic tap 1018 receives optical signals 1012 and sends one copy of the signal including **at least header information** 1014 to demultiplexer 1024, and sends another copy of the signal including **at least payload information** 1016 to delay line 1022.
> (Ex. 1, col. 21, ll. 6-10, emphasis added.)

In other words, one "copy" of the optical signal may only be the "header information" part, and the other may only be the "payload information" part.

The file history confirms that the separation into parts includes separation by wavelength, *i.e.* not true "copies." In the first Office Action, the PTO determined that item 190

[5] In an April 17, 2007 Amendment, the term "tap" was changed to "divider." (Ex. 12, p. 2.)

disclosed in Li meets the first part and second part limitations. (Ex. 4, p. 2.) Li discloses a "prism" 190 that receives "white input light" 101. (Ex. 5, ¶¶ 44, 51.) The light is separated into two or more parts by wavelength. (Ex. 5, ¶ 70.) These parts are clearly not "copies" of one another. The PTO also determined that item 27 (Fig. 6) in Silverstein meets the first/second part limitations. (Ex. 4, p. 6.) Silverstein discloses a "dichroic separator 27." (Ex. 6, col. 12, l. 53.) Light from the "polychromatic light source 20" (*Id.*, col. 12, l. 34) "is split by wavelength into red, green, and blue light at dichroic separator 27" (*Id.*, col. 14, ll. 20-21).

Similarly, in the second Office Action, the PTO stated that item 302 of TI's patent (Fig 3) meets this limitation. (Ex. 7, p. 2.) The TI patent discloses a "mirror" 302 that separates the light by wavelength and "allows infrared light to pass while reflecting visible light." (Ex. 8, col. 4, ll. 14-21.)[6]

Consistent with the header/payload embodiment of the '714 patent (quoted above), and the PTO's rejections based on signal separation by wavelength, it is known to those of skill in the art that "header information" may be distinguished from "payload information" by wavelength. (Ex. 14, §6.2.4.)

The defendants' proposed construction imports unclaimed limitations into the claims, and is *contrary* to the specification, file history, and the knowledge of those skilled in the art at the time of the invention. "Copies" are not a requirement of the claims.

[6] In their technology tutorial, the defendants argue that the invention of the '714 and '862 claims use only "non-visible" "infrared light" signals. The asserted claims make no reference to these limitations, and the PTO's interpretation of the claims to cover light signals in the visible spectrum (e.g. red, green, blue, etc.) confirms that the defendants' argument is improper.

6. "output interface" ('714 and '862 patents)

Cheetah's proposed construction is consistent with the claim language, and the broad teachings of the patent specifications. The claimed "output interface" is that portion of the system that receives the output signal after it has been processed. For example, Figures 10(a-d), 11(a-g) and 15 illustrate the output interface as a simple "OUT." (Ex. 1.) Figures 7a, 7b 8(b), 8(c), 8(g), 10(a-b), 16(b-c) and 17 of the '862 patent disclose the same thing. (Ex. 2.) Nothing in the '714 or '862 patents require the output interface to be "for connecting to another system or device." The defendants manufacture this new limitation, and it is improper to import it into the asserted claims.

During prosecution of the '714 patent, the PTO determined that the prior art projector disclosed in Silverstein includes an "output interface." (Ex. 7, p. 6.) Referring to Figure 1 of Silverstein, the PTO identified "projection lens" 32 as the claimed "output interface." (*Id.*) Similarly, in the second Office Action, the PTO determined that the "projection lens" 204 (Fig. 3) in TI's projector is an "output interface." (Ex. 7, p. 4.)

Silverstein's and TI's projection lens is not a "port for connecting to another system or device." A person of ordinary skill in the art reviewing the file history would have no reason to interpret the broadly-claimed "output interface" as a "port for connecting to another system or device." Under controlling law, the defendants' construction must be rejected. *Markman*, 52 F.3d at 980.

7. "moveable reflector" ('714 patent)

There is no dispute that the claimed "moveable mirror" is a mirror that moves as a result of an applied voltage. The '714 patent discloses multiple embodiments of how the mirror is moved in this fashion. (Ex. 1, col. 7, ll. 29-41; col. 8, ll. 15-28.)

The dispute is with respect to the *type* of moveable reflector. The claims, as written, do not require any particular type of reflector other than a "moveable" one. The defendants seek to import a narrow limitation into the claim, requiring that the reflector be a "variable blazed grating." This is contrary to the broader language of the claims themselves.

In addition, the defendants' proposed construction is contrary to the '714 patent disclosure of several different types of reflectors that may be used:

> Moreover, although particular configuration has been described with respect to FIGS. 10a-10d, numerous modifications could be made without departing from the scope of the invention. For example, **switches implementing different geometric configurations, or different numbers of blazed grating elements, circulators, reflective surfaces, or other optical elements are contemplated as being within the scope of the invention**. (Ex. 1, col. 14, ll. 58-65.)

The above statement makes clear that "variable blazed gratings" are only one of many possible different configurations for the moveable reflector.

8. "separating the optical signal communicated for processing into at least a first portion of optical signal wavelengths and a second portion optical signal wavelengths" ('862 patent)

The claim construction debate for the "separating" step is not about the term "separating," but about the nature of the "optical signal" that is being separated. Cheetah contends, based on the context of the claim language itself, that the optical signal (comprising a plurality of wavelengths) is separated into two or more wavelengths. *Phillips*, 415 F.3d at 1314; *Vitronics*, 90 F.3d at 1582 ("the context in which a term is used in the asserted claim can be highly instructive"). In contrast, defendants seek to inject the unnecessary "different communication channels" limitation to the claim. The asserted claims of the '862 patent make no reference to "communication channels." In fact, the entire '862 patent never mentions the term"communication channels."

Further undermining the defendants' proposed construction are at least two embodiments of "separating" disclosed in the '862 patent that parse light by wavelength. In one embodiment, a "wavelength division demultiplexer 802" is used for "separating optical signal 816 into a plurality of wavelength signals 806a-806n." (Ex. 2, col. 28, lines 49-52.) In another embodiment, "filters 1826 and polarization selection elements 1828" are used to "isolate the individual wavelength signal from any remnants of neighboring wavelength signals." (Ex. 2, col. 31, ll. 31-36.)

9. "dividing at least a portion of the optical signal communicated for processing into at least a first part and a second part, wherein the first part comprises an amplitude that is different than an amplitude of the second part" ('862 patent)

The central dispute with respect to the "dividing" step is whether the optical signal must be divided into two "copies" having different amplitudes. Claim 13 recites that a "portion" of the optical signal is divided into two "parts" such that the first and second parts have different amplitudes. Claim 13 does not require that the two "parts" of the "portion" are "copies" as the defendants' construction proposes. For this reason alone, the defendants' construction is improper. *Phillips*, 415 F.3d at 1323; *Nazomi Communications, Inc.*, 403 F.3d at 1369.

While the '862 specification describes the use of a "beam splitter" to create "copies" of an optical signal (Ex. 2, col. 4, .l. 54 - col. 5, l. 8), the defendants' construction improperly imports those unclaimed details into claim 13. *Id, id.*

In addition, the "beam splitter" described in the '862 specification is recited in *other* claims of the '862 patent. (Ex. 2, claims 1, 6, 8, and 18.) Under the principle of claim differentiation, the fact that the beam splitter is not recited in claim 13 indicates that the inventors intended claim 13 to be broader. *Phillips*, 415 F.3d at 1314 ("Differences among claims can also be a useful guide in understanding the meaning of particular claim terms."); *Allvoice Computing PLC v. Nuance Communications, Inc.*, 504 F.3d 1236, 1248 (Fed.Cir. 2007) ("This court enforces a presumption that each claim in a patent has a different scope."). This further confirms that the defendants' proposed construction, which requires *imported* "copies" of the optical signal portion, is improper.

10. "receiving at least the first portion of optical signal wavelengths at a moveable mirror" ('862 patent)

It is unclear whether there is a dispute between the parties concerning the "receiving" step of claim 13. To the extent there is one, it pertains to whether the received "first portion of optical signal wavelengths" can be processed before it is received at the moveable mirror. Cheetah believes that the claim language permits such processing.

While the "first portion" is created in the "separating" step discussed above, claim 13 also recites "dividing" the first portion into two "parts." This language is consistent with embodiments disclosed in the '862 specification, which perform the "separating" step, followed by the "dividing" step, then followed by the "receiving" step.

For example, Figure 10b (reproduced below with color added) illustrates separating optical signal 816 with wavelength division demultiplexer 802 (shown in yellow) into a plurality of wavelength signals 806a-806n. (Ex. 2, col. 27, ll. 13-16.) The signals 806 are then divided at beam splitter 818 (shown in red) into two parts. (Ex. 2, col. 28, ll. 16-20.) The parts are subsequently received by the moveable mirrors 830 and 840 (shown in green). ('Ex. 2, col. 28, ll. 32-35.)

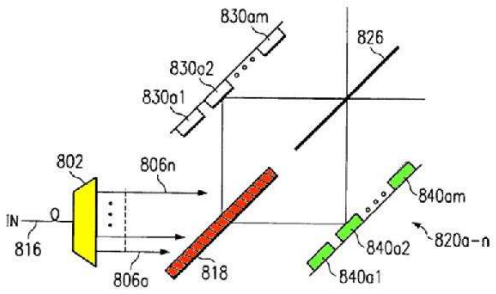

FIG. 10b

Cheetah is not attempting to import an order into claim 13 that is not recited. *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1342 (Fed.Cir. 2001) ("Unless the steps of a method actually recite an order, the steps are not ordinarily construed to require one.") Cheetah is merely proposing that claim 13 should not be construed to *prohibit* processing of the first portion of optical signal wavelengths *before* it is received at a moveable mirror, such as by the claimed "dividing" step.

A negative construction prohibiting this arrangement would be contrary to embodiments in the '862 specification, and improper because claim 13 does not presently include any such negative limitation. *Omega Engineering Inc. v. Raytek Corp.*, 334 F.3d 1314, 1322 (Fed. Cir. 2003) (district court erred by "incorporat[ing] into the claim language a novel negative limitation"); *Linear Tech. Corp. v. Int'l Trade Comm'n*, 566 F.3d 1049, 1059-1060 (Fed. Cir. 2009) (holding that ITC improperly construed the claim to include an exclusionary limitation); *Hyperion Solutions Corp. v. Outlooksoft Corp.*, 422 F.Supp.2d 760, 773 (E.D. Tex. 2006) (Ward, J.) (importing negative limitations into claims is "generally not favored.").

11. "the moveable mirror is operable to move relative to the inner conductive layer in response to a voltage difference between the moveable mirror and the inner conductive layer" ('862 patent)

The dispute with the "moveable mirror" limitation pertains to the nature of the movement. Claim 14 requires movement of the mirror, but it does not require any particular *type* of movement. The defendants are attempting to improperly import narrow details from a preferred embodiment of the '862 the specification into claim 14.

The '862 specification provides a broad disclosure of the different manners in which movement of the mirrors may be induced by the application of a voltage difference. (Ex. 2, col. 10, ll. 53-57, col. 11, ll. 34-42.) While preferred embodiments certainly include mirrors moving in a "piston-like motion" (e.g., Ex. 2, col. 5, l. 55 - col. 6, l. 3), the '862 specification expressly states that the mirrors may exhibit "curvature" and that "physical embodiments of the invention may not exhibit true 'piston-like' motion":

> In practice, for various reasons, physical **embodiments of the invention may not exhibit true "piston-like" motion, although such embodiments are intended to be within the scope of the invention**. For example, the moveable mirror layer may be anchored at its ends and **may exhibit some curvature** between the anchor points as it moves from one position to another. In addition, **variances in resistance across the moveable mirror layer may result in one portion of the moveable mirror layer experiencing more movement than another portion**. The invention is intended to encompass these embodiments within the definition of "piston-like" motion.
>
> (Ex. 2, col. 6, ll. 4-15, emphasis added.)

These teachings are directly contrary to the defendants' proposed construction, which requires displacement "in an approximately parallel plane to the previous mirror position." Importing such contrary limitations is improper. *Primos Inc.*, 451 F.3d at 848 ("[W]e . . . should not normally interpret a claim term to exclude a preferred embodiment."); *Vitronics*, 90 F.3d at 1583 (stating a construction that excludes the preferred embodiment "is rarely, if ever correct and would require highly persuasive evidentiary support").

In addition, "piston-like motion" is recited in claims of U.S. Patent No. 6,82,771, a parent of the '862 continuation patent. (Ex. 13, claims 3, 10 and 17.) This also indicates that

piston-like motion is not a limitation of claim 13. *Forest Lab's, Inc. v. Abbott Lab's*, 239 F.3d 1305, 1310 (Fed.Cir. 2001) ("Where claims use different terms, those differences are presumed to reflect a difference in the scope of the claims.")

Finally, the claim construction process is intended to clarify the claimed subject matter so that the fact finder can achieve the infringement (and validity) determination. What is "approximately parallel" under the defendants' construction? What is the "previous mirror position?" When is it determined? Defendants' proposed construction does not clarify claim 14 for the fact finder, it makes it more ambiguous.

12. "reflecting the first portion of optical signal wavelengths from the moveable mirror to form at least one MEMS output signal having an amplitude" ('862 patent)

In context, claim 13 plainly recites that the reflected portion of the optical signal is reflected from the moveable mirror (MEMS) device and communicated to the output interface:

> **reflecting the first portion of optical signal wavelengths from the moveable mirror to form at least one MEMS output signal** having an amplitude, the amplitude of the MEMS output signal capable of being changed by moving the moveable mirror; and
>
> **communicating the at least one MEMS output signal to an output interface**.
>
> (Ex. 2, claim 13, emphasis added.)

The dispute between the parties is what the MEMS output signal is used for *after* it is reflected. The defendants seek to import into method claim 13 a new process step that is

not recited: "interference between light beams." Such an importation is improper. *Phillips*, 415 F.3d at 1323; *Nazomi Communications, Inc.*, 403 F.3d at 1369.

Nothing in claim 13, or the '862 patent for that matter, *requires* that the claimed MEMS output signal cause "interference between light beams." In addition, the '862 specification discloses embodiments in which the MEMS output signal is **not** used to cause interference between light beams. Figure 7b, for example, discloses a configuration in which the MEMS output signal cannot interfere with other light beams. In that embodiment, beam splitter 618 is configured "to reflect the s-polarized waves and to transmit the p-polarized waves." (Ex. 2, col. 17, ll. 43-45.) This causes MEMS output signals 622 and 624 to be orthogonally polarized by 90° in the s (horizontal) and p (vertical) orientations. As a result, when they are combined at the output interface ("OUT"), the MEMS output signals 622 and 624 cannot interfere with one another. The defendants' proposed construction improperly excludes this embodiment. *Primos Inc.*, 451 F.3d at 848 ("[W]e . . . should not normally interpret a claim term to exclude a preferred embodiment."); *Vitronics*, 90 F.3d at 1583 (stating a construction that excludes the preferred embodiment "is rarely, if ever correct and would require highly persuasive evidentiary support").

13. "the amplitude of the MEMS output signal capable of being changed by moving the moveable mirror" ('862 patent)

Cheetah proposes a construction that is consistent with the language of claim 13. The defendants seek to import yet another unclaimed function or step into the claim: "phase shift." According to the defendants, claim 13 should *additionally* require that the claimed

change of amplitude be caused by "phase shift." Such an importation is improper. *Phillips*, 415 F.3d at 1323; *Nazomi Communications, Inc.*, 403 F.3d at 1369.

In addition, the '862 patent discloses several embodiments in which phase shift is **not** used, and at least one embodiment in which the amplitude of the MEMS output signal is changed **without** phase shifting:

> Through appropriate combinations of mirror movements, switch 400 can operate in either pass-through or cross-over mode. For example, mirrors 430a and/or 440a can be operated to create **no phase shift** between first and second signal copies 462a and 464a, while mirrors 430b and 440b can be manipulated to create **no phase difference** between first and second signal copies 262b and 264b. This operation would result in a pass-though mode of operation, allowing signals 460a and 460b to pass through to outputs 480 and 490, respectively. **In particular, in this mode of operation, a zero phase difference between first and second signal copies 462b and 464b results in output 474b being near zero, while output 472b is near a maximum.**
>
> (Ex. 2, col. 14, ll. 35-44, emphasis added.)

In this embodiment, the signal amplitude is "zero" at output 474b without inducing any phase shift. (Ex. 2.) Defendants' proposed construction would improperly exclude this embodiment from the scope of claim 13. *Primos Inc.*, 451 F.3d at 848; *Vitronics*, 90 F.3d at 1583.

Finally, the '862 specification teaches that achieving an amplitude change by "phase shift" is achieved by a *combination* of two optical signals having a difference in phase:

> As shown in FIG. 1b, moving first mirror 30a from position 32a' to position 32a by distance DELTA L creates a difference of DELTA d in the length of the signal path of first signal copy 62a. This difference in signal path translates to a difference in phase between first signal copy 62a and second signal copy 64a of

> input signal 60a. **The phase difference between first and second copies 62a and 64a results in an interference, which alters the amplitude of output signal 72a relative to that of input signal 60a.**
>
> (Ex. 2, col. 6, ll. 25-34, emphasis added.)

The "combination" of two signals necessary to achieve a change in amplitude is not recited in claim 13 of the '862 patent – but it is recited in claims 2, 9 and 16 in the '771 patent, a parent of the '862 patent. (Ex. 13.) Under the doctrine of claim differentiation, it is improper to import a "phase shift' operation into claim 13. *Forest Lab's, Inc.* 239 F.3d at 1310; *Allvoice Computing PLC*, 504 F.3d at 1248.

III. CONCLUSION

Cheetah Omni's proposed constructions provided in Exhibit 3 are the appropriate constructions for the disputed terms because they stay true to the original claim language allowed by the PTO, and they are consistent with the patents and file history from which they arise. The defendants' proposed constructions are contrary to this intrinsic record, and should be rejected.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was filed electronically in compliance with Local Rule CV-5(a) on July 27, 2009. Therefore, this document was served on all counsel who are deemed to have consented to electronic service. Local Rule CV-5(a)(3)(A). Pursuant to Fed.R.Civ.P. 5(d) and Local Rule CV-5(d) and (e), all other counsel of record not deemed to have consented to electronic service were served with a true and correct copy of the foregoing by email on July 27, 2009.

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